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Comment: Ethical Dilemmas in Worldwide Polio Eradication Programs

Taylor, Cutts, and Taylor assert that there are ethical dilemmas in the implementation of worldwide polio eradication programs.[1] They make the following statement: "We consider it shortsighted, and possibly unethical, for donors to use their considerable influence to promote polio eradication if this delays or diverts long-term investment by [the least developed] countries in sustainable health systems." The central themes of their discourse are as follows: (1) Polio eradication should not be (or is not) high on the list of priorities for developing countries, and it is placed higher than it should be because of excessive influence by industrialized countries that already have controlled or eliminated polio, and (2) polio eradication does not contribute to the development of health systems in the least developed countries. We appreciate that the authors have made known their concerns and welcome the opportunity to report that developing countries are capable of making their own rational health decisions, that eradication programs strengthen national health systems and initiatives, and that the current polio eradication efforts are operational in nearly all polio-endemic countries with unprecedented support by governments throughout the world.

Based solely on current poliomyelitis morbidity, mortality, and disability rates, developing countries have other, more important health priorities. Nonetheless, global polio eradication is and should be a health priority for all countries, including developing countries. Worldwide eradication is now feasible, and substantial resources are available. Eradication activities can be and are used by many developing countries as a springboard to address other health priorities. After global eradication has been achieved, all countries will benefit from ending polio vaccination. The resources saved, both human and financial, are available for reallocation to other health priorities. The fact that Taylor et al. point out that the cost savings of acute care and rehabilitation are heavily weighted toward industrialized countries,[2] serves only to highlight the economic undervaluation of polio-disabled children in developing countries. In human terms, they suffer no less than those from industrialized countries.

The Polio Eradication Initiative has received worldwide political support at the highest levels, first through a unanimous resolution of the World Health Assembly,[3] and then in every World Health Organization region of the world through resolutions by member countries. Most recently, the World Health Organization's African Regional Committee[4] and the heads of state attending the Organization of African Unity Summit[5] endorsed the program. In Africa, polio eradication activities are guided by a committee whose members include some of the most respected leaders of the continent, including President Mandela of the Republic of South Africa, Archbishop Desmond Tutu (chairperson of the South African Truth Commission), Dr Salim Salim (secretary general of the Organization of African Unity), and others.

In 1995, the Taylor Commission[6] reported that (1) the Polio Eradication Initiative has contributed positively to the overall strengthening of health systems in the Americas; (2) the initiative contributed substantially to the beginning of a "culture of prevention" among politicians, health workers, and community members and stimulated greater cooperation with health workers on the part of government personnel and volunteers; (3) experience in the Americas showed definitively the need for implementing polio eradication activities as part of systematic programs to build health infrastructure; and (4) in the Americas, the greatest positive impact was on social mobilization, along with improvements in intersectoral cooperation (cooperation among the health sector and the other sectors of government and society). Social mobilization and intersectoral cooperation are two of the three pillars of primary health care as originally conceived at the 1978 Alma Ata World Conference on Primary Health Care. The report cautions, however, that direct extrapolation of these findings can be made, for the most part, only to health systems at levels of development similar to that of Latin America.

A recent supplement to the *Journal of Infectious Diseases*[7] includes several contributions that address the impact of the Polio Eradication Initiative on the Expanded Programme on Immunization and health systems development in general.[8–12] Sections on Cambodia and Laos, rated as two of the least developed countries, are included in the supplement. Reported benefits of the Polio Eradication Initiative now being observed in polio-endemic regions of the world include (1) enthusiasm and high-level political support for the Expanded Programme on Immunization; (2) increased national funding for Expanded Programme on Immunization and Polio Eradication Initiative activities and vaccines; (3) increased international partnership and donor support for the Expanded Programme on Immunization; (4) enhanced disease sur-

Editor's Note. See related article by Taylor et al. (p 922) in this issue.

veillance capacity for other targeted diseases, including measles, neonatal tetanus, and cholera; (5) strengthened public health laboratory capacity; (6) improved epidemiologic skills of national, provincial, and district-level health staff; (7) strengthened communication systems through rapid reporting and follow-up of cases; (8) strengthening of the Expanded Programme on Immunization and health care management capacity; and (9) increased emphasis on accelerating other disease elimination/eradication initiatives such as measles and vitamin A deficiency. In addition, "days of tranquility," a concept pioneered in Central America to suspend internal strife and civil wars in order to facilitate immunization and other health activities, have been instituted in many other parts of the world, including Afghanistan, the Philippines, Sudan, and Sri Lanka.[13] Often, these periods give health workers access, for the first time, to populations that would not normally benefit from organized health services.

Polio-endemic countries have been encouraged and supported in their polio eradication efforts by a coalition of partners. These partners include United Nations organizations (i.e., the World Health Organization and the United Nations Children's Fund), the nonprofit private sector (Rotary International), and the governments of Australia, Canada, Denmark, Finland, Germany, Japan, Norway, Sweden, the United Kingdom, and the United States. Some of these organizations and governments have made a sustained, long-term commitment for up to 20 years to the initiative in developing countries. Most of the funds for polio eradication are new, would not otherwise have been available, and hence could not have been diverted from other health programs. Rotary International, a service organization, has played a key role in bringing new resources into the health sector and is providing long-term support to the Polio Eradication Initiative. Rotary will have contributed an estimated $400 million to purchase polio vaccine for National Immunization Days and to support other recurrent costs of the program from its inception in 1985 through the year 2005, when certification of the global eradication of polio is anticipated to occur. This is the largest contribution ever by a private-sector organization to a public health initiative.

Approximately 80% of the total resources required for polio eradication in the Americas have been provided by participating countries themselves. They have provided the staff to implement the activities essential to polio eradication and funded other costs. On epidemiologic grounds and as a means of minimizing costs, National Immunization Days are conducted over a short period (ideally 1 day), and participation by other sectors and volunteers is encouraged.

For the least developed countries, however, a much higher proportion of the costs of polio eradication than elsewhere are borne by external donors. For example, 92% of the $32 million in vaccine and operational costs necessary to support National Immunization Days in 31 countries in the African region between January 1996 and March 1997 was provided by external partner organizations, much of it new funding for the eradication initiative.[14] The increased proportion of external funds for polio eradication in the least developed countries, as well as nationwide volunteer participation and contributions from the private sector, should minimize the need to shift substantial funds from national budgets for polio eradication activities.

We believe that there is a necessary role for both targeted health intervention programs, such as polio eradication, and programs whose primary focus is on building sustainable immunization programs and other health systems. Taylor et al. propose either (1) that poor countries not participate and spend their resources on other health priorities (which would result in global failure of polio eradication) or (2) that the projected benefits of polio eradication in industrialized countries be used to build sustainable health systems in developing countries. This proposal does not take into account that polio eradication and health system infrastructure development are complementary activities with their own sources of support and funding. For example, activities designed to improve health systems infrastructure in Africa, such as the Bamako Initiative for Health Center Revitalization and the United Nations Special Initiative for Africa, are occurring in parallel with the eradication initiative.

On the other hand, many donors in industrialized countries support the eradication initiative because it is a targeted program that promotes enlightened self-interest. Their funding decisions derive from their perception of their own benefits and costs. In terms of the overall objective, however, savings from discontinued vaccination after eradication are not likely to accrue before the year 2005 at the earliest. In the meantime, to achieve polio eradication, the initiative will need continued donor support and, in some areas, even increased support. Concurrently, and not in direct competition with the targeted efforts in polio eradication, continued development of sustainable health systems for the world's poorest children is certainly needed. That development requires adequate funding from both national and international sources. In general, the two types of programs are interdependent, complementary, and, under the correct circumstances, even synergistic. The Polio Eradication Initiative fulfills these conditions, and we believe its legacy will not only be the eradication of a devastating disease from the face of the earth but positive contributions to the development of sustainable immunization programs.

Extraordinary progress has been achieved toward polio eradication. In 1988, the World Health Assembly adopted the goal of global polio eradication by the year 2000.[3] Since then, the incidence of reported poliomyelitis cases has declined by 89% (from 35 251 in 1988 to 3755 in 1996). In 1991, the last case of poliomyelitis associated with wild poliovirus in the Western Hemisphere was detected in Peru, and, in 1994, an international commission certified the hemisphere free of indigenous wild poliovirus.[15] In the vast population of China, indigenous wild poliovirus has not been isolated in more than 2 years despite substantial improvements in surveillance.[16] The entire Western Pacific Region of the World Health Organization—a region populated by 1.6 billion people—appears to be on the brink of achieving polio eradication.[17]

Progress has also been reported from many other parts of the world.[17,18] Countries in the Americas[19] and in Europe, Central Asia, the Middle East, and South Asia[20] pioneered collaboration in conducting synchronized National Immunization Days. Bangladesh, Bhutan, India, Myanmar, Nepal, Pakistan, and Thailand followed their example in December 1996 and January 1997. By the end of 1996, all polio-endemic countries of Europe and Asia, as well as 27 countries in sub-Saharan Africa, had conducted National Immunization Days.[21,22] Globally, two thirds of the world's children less than 5 years of age received supplemental doses of oral poliovirus vaccine through National Immunization Days in 1996. National Immunization Days have been the occasion for the largest single public health events in recorded history. In India, 121 million children were vaccinated in 1 day.

Concurrently, surveillance systems have been strengthened in virtually all of these countries, and a global laboratory network has been established to provide virologic support for the initiative in all regions. In the vast majority of the participating countries, these achievements have been associated with improvements in routine coverage with oral poliovirus vaccine and other vaccines.

Some statements made and data used by Taylor et al. are incorrect or misleading.[1] They incorrectly imply that Rudolf Knippenberg, regional health advisor for the West and Central African Regional Office of the United Nations Children's Fund, is advocating alternative methods to National Immunization Days as a way of achieving polio eradication in West Africa; in reality, he has endorsed the strategy.[23] They incorrectly state that, in the African region, 25% of countries in 1990 and only 17% of countries in 1994/95 reported an 80% or greater vaccination coverage rate with three doses of oral poliovirus vaccine.[1] Data show that, in 1990, 13 of 42 (31%) countries reported a vaccination coverage of 80% or more, including 6 small island nations.[24] In 1994/95, 13 of 43 (30%) countries reported a vaccination coverage rate of 80% or higher, but only 3 were small island nations.[24,25] The regional coverage rate (three doses of oral poliovirus vaccine) was reported to be 57% in 1990 and virtually unchanged at 58% in 1995.[24] Taylor et al. also suggest that Ghana achieved a coverage rate of 80% in 1990, a rate that then fell to 32% as reported in a 1992 review. While 80% may have been achieved in some areas of the country, the reported national coverage with oral poliovirus vaccine changed only slightly in Ghana between 1990 (50%) and 1993 (47%).[24] Finally, Taylor et al. appear to suggest that polio-related disability is not associated with costs in developing countries because of limited or no access to care. However, other costs incurred include loss of productivity and the need for long-term support of disabled individuals.

The Polio Eradication Initiative has engendered a close collaboration of countries and regions unprecedented since the effort that eradicated smallpox. Polio eradication is a much needed success story for struggling health systems and public health workers in many countries. The initiative has prevented hundreds of thousands of children from becoming disabled. Also, it has captured the attention of politicians and the imagination of the public and has contributed new strength to health systems and programs. The global laboratory network established for polio, moreover, has the potential to support other diseases of public health importance, and it could become a cornerstone for the Emerging Disease Initiative. For the near future, the achievement of polio eradication is a precondition for a global measles eradication target. There is broad consensus that measles is a disease problem that has a high priority for developing countries. That new task will be less daunting because of the lessons learned in the Polio Eradication Initiative, the enhanced surveillance system, and the special experience gained with National Immunization Days, even in the least developed countries.[26,27] Perhaps the lasting legacy of the initiative will be the thousands upon thousands of public health staff trained to make assessments and to design and evaluate interventions; these health workers will question the status quo and have developed the capability to change it. □

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Comment: Evaluating the Effectiveness of Hospital Care

The need to assess the medical care provided by institutions and by individual practitioners has been long recognized.[1,2] In the past, the most common response took the form of the review of individual cases implemented at the governmental level through programs such as the Professional Service Review Organizations of the 1970s and their successors, the Peer Review Organizations, and at the hospital or clinic level through various internal committees.

More recently, the focus of attention has shifted to the analysis of the "quality" of the care received by groups of patients or by populations.[3–5] Moreover, the need to make known publicly the results of such assessments is becoming rapidly established. This is well demonstrated by the development by the National Committee on Quality Assurance of the Health Plan Employer Data and Information Set,[6] currently in its third major revision, and by the Joint Commission on the Accreditation of Healthcare Organizations of its Indicator Measurement System,[7] as well as by the adoption by a number of states of an array of evaluation and reporting tools—for example, Pennsylvania's MedisGroups data acquisition and analytic methodology,[8]—and by consortia of private organizations such as Cleveland Health Quality Choice with an internally developed approach.[9]

The present intent to measure and to make known the "quality" of care received by patients is certainly laudable. However, as Dr Rosenthal's paper on associations between hospital mortality rates[10] nicely illustrates, the difficulties lie in implementation. They center on what is meant by "quality" and how it is to be measured. He employs results obtained in a now-abandoned project, the Health Care Financing Administration's "Medicare Hospital Information" reports. He uses these to address the question whether the risk-adjusted mortality rates of patients hospitalized for a select group of conditions or procedures are consistent enough to permit confident inferences about the quality of care provided by the hospitals.

The first question that arises is whether mortality rates are an acceptable measure of the quality of care. The more commonly used criterion is adherence to standards of practice, or, in more contemporary terms, practice guidelines. Indeed, that is the criterion still used by the Peer Review Organizations in case review, and it is under consideration as the tool for assessing performance in populations. It also underlies nearly all of the measures included in the Health Plan Employer Data and Information Set. Another criterion, in active use by the Joint Commission on the Accreditation of Health Care Organizations in the survey of hospitals and by the National Committee on Quality Assurance in the survey of managed care organizations, addresses whether physical and organizational characteristics meet the standards set forth by these two groups. Thus, the approach most commonly used to assess the quality of care examines, in Donabedian's terms, "structure" and "process."

Why then focus on mortality, an "outcome"? Indeed, it is often argued that the assessment of the quality of care should not address outcomes at all because (1) outcomes are insufficiently sensitive (patients are resilient and poor care does not necessarily result in bad outcomes); (2) outcomes are not sufficiently specific (bad outcomes occur for reasons other than poor care); and (3) collecting the data needed to characterize outcomes properly is excessively burdensome. Dr Rosenthal's paper is based on a project in which concern about the burden of data collection took precedence over concern about sensitivity and specificity. The results illustrate in one way the penalty that was paid as a consequence. The magnitude of that penalty was known to the Health Care Financing Administration within a few months of the first official release of the data, although its publication in the peer-reviewed literature took considerably longer,[11] and led to abandoning the project.

The use of adherence to guidelines or standards as a measure of the quality of care has uncertain logical and empirical bases. In the management of medical problems, physicians decide on courses of action on the presumption that (1) they have a sufficiently clear understanding of the underlying physiologic or anatomic derangement whose manifestations have caused the patient to seek care, and (2) they have effective means to alter the course of the disease. Overall, this seems to be the case, as evidenced by the profound decline of 27% in age-adjusted mortality rates observed in the United States between 1970 and 1990, the era of high technology in medicine.[12] But this very favorable trend masks the great variation in the practice of medicine called to our attention by John Wennberg and his associates.[13] The underlying medical uncertainty is clearly brought out in the work of the RAND Corporation on the rating of appropriateness of use of selected procedures and is summarized by the statement: "Patients should know that a substantial percentage of procedures are performed for indications about which expert physicians disagree."[14] Under such circumstances, the use of practice guidelines to judge the quality of care and, indeed, to bring consistency to the practice of medicine is problematic.

On the other hand, the need to focus on outcomes rather than on process derives directly from the purpose of medicine. Patients do not seek medical care to provide practitioners with the opportunity to demonstrate their skill in performing prescribed rituals. They seek medical care, particularly from hospitals, because they are ill and wish to be healed. Indeed, as with treatment of cancer, they tolerate much pain and suffering in the short term in the hope of recovery or, at least, of independent function in the long term. Care must, therefore, be judged against the standard set by those hopes and expectations. In their most fundamental form, these expectations consist of postponement of death, reduction of morbidity, and improvement of functional status, achieved with the imposition of the least economic burden on the patient and/or his surrogate payer. Each is a component of the overall outcome, and tools are available to quantify each.

Editor's Note. See related article by Rosenthal (p 429) in the March 1997 Journal.